



Engineers & Scientists
Environmental Services
Waste Management
Water Resources
Site Development
Special Structures
Geotechnical Analysis

October 27, 1987
60251

Andrew H. Perellis, Esq.
Gessler, Flynn, Laswell & Fleischmann
Three First National Plaza
Suite 2300
Chicago, Illinois 60602

RE: Modifications to Scope of Work
American Chemical Services RI/FS
Griffith, Indiana

Dear Mr. Perellis:

A meeting among the U.S. EPA (EPA), Warzyn Engineering Inc., (Warzyn), the ACS Steering Committee (Steering Committee), and Roy F. Weston, Inc. (Weston) was held on October 5, 1987 to discuss the EPA comments on Warzyn's July 14, 1987 "Summary Scope of Work" for the ACS RI/FS. Specific agreements to each of the comments are presented below. In general, there was agreement that the Steering Committee and EPA were trying to accomplish the same goals in conducting the RI/FS. Warzyn explained that while the term "Phase" in its letter was used to show a logical progression of steps in the RI/FS process, it is the order of activity within each phase that is important as opposed to the number of phases itself. Therefore, in an effort to allow EPA's consultant (Weston) to more readily evaluate the work plan, Warzyn has now organized the proposed RI work plan for the ACS site into 2 phases and has now developed a schedule of tasks.

Attached is a revised "Framework for the Proposed Scope of Work," which has been modified on the basis of discussions at the October 5 meeting. The purpose of the framework is to outline the logical progression which will occur during the remedial investigation. A time schedule showing the order of tasks and projected task duration is also attached. The time schedule was developed with the understanding that agreement was reached on the framework of the RI/FS and that specific modifications to the details of the Work Plan could begin. Warzyn has begun revising the Work Plan.

Warzyn Engineering Inc.
Hamilton Office
One Pierce Place
Suite 1110
Napoca, Illinois 60143-2651
(312) 774-8100

EPA Review Letter

Eighteen specific comments were made on pages 2 and 3 of the EPA letter to Mr. Perellis, dated September 16, 1987 (EPA ref.: 5HE- 12). It was Warzyn's understanding that agreement was reached on each of the concerns during the October 5 meeting. A statement of Warzyn's understanding of each concern is given below:

1. Because of the sensitive nature of issues involved, attorneys will be involved in interviews with ACS, Kapica, and other personnel.
2. Warzyn has obtained a copy of the site map from Roy F. Weston, Inc.
3. Preliminary identification of buried-barrel areas will be made by analysis of aerial photographs taken at various times during site operation. A magnetometer will be used to confirm or pinpoint buried barrels in areas suitable for obtaining magnetic data. *- what will be used if this does not work*
4. All datum points for mapping locations and elevations will be consistent with the most recent national geodetic vertical datum (NGVD) available for the site.
5. The ACS Part B RCRA permit has been obtained and will be reviewed for pertinent information.

(Former Phase II)

6. All monitoring wells will be secured with locking steel protective covers. Shallow piezometers located in accessible areas of the site will be protected with locking covers, temporarily secured in the borehole. The shallow piezometers will be left in place only while the investigation is active on site. They will be removed, when the field phase of investigation is completed.
7. The grid of shallow piezometers will consist of approximately 40 shallow points in approximately a 200-foot grid spacing. The water level data will be used to develop potentiometric maps, so exact spacing is not critical in most areas. However precise locations will be significant in certain areas, such as surrounding the ACS lagoon.
8. "Preliminary" samples was used to mean "initial". Initial samples at each sampling location will be analyzed for the full Target Compound List (TCL List is attached). The parameter list may be reduced at some locations in subsequent sampling events, to include the chemical species previously found at the location. *<---*

WARZYN


(Page 4 EPA Letter)

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11. The original "Framework for Proposed Scope of Work" Attachment 2 to Warzyn's July 14, 1987 letter, separated the RI into four phases. The term "phase" was used to establish the logical succession which would occur during the investigation. A "Modified Framework for Proposed Scope of Work" is attached to this letter which uses the term "Task", and presents a two-phased remedial investigation. Additionally a time schedule is attached to indicate sequencing and timing of each task. Surface water and sediment sampling will be conducted as shown in II. B. 1 of the framework.

(Former Phase III)

12. The leachate wells will be placed in the landfill to obtain water levels and chemical analyses of leachate.
13. Monitoring wells will be placed in the lower aquifer in Phase I; see III. B. 2 of the framework, or Task 3, B of the schedule.
14. Only thoroughly documented, publicly available models will be used in analysis. At this time, the expectation is that the U.S.G.S. Modular 3D Finite-Difference Flow Model (Modflow) will be used for modeling groundwater flow. Contaminant transport will be modeled with one of the following models: U.S.G.S. Method of Characteristics (MOC) Model, or the Illinois State Water Survey Random Walk model. The model assumptions and limitations will be project-dependent, therefore, they will be presented as part of the technical memorandum addressing the groundwater system, and as part of the RI Report.
15. A data sufficiency analysis will be conducted at the end of Phase I (Task 3) to evaluate the sufficiency of existing data for completing the expressed purposes of the RI/FS.



16. The results of the data sufficiency analysis will indicate what additional investigative tasks will be required to complete the RI/FS. It is possible that those tasks could include the collecting of additional surface water and sediment samples, the collection of additional waste samples, the construction and sampling of additional monitoring wells, the re-sampling of previously constructed wells, or possibly other sampling and analysis. Until the waste and site characterizations start to develop and the data sufficiency analysis is conducted, it will not be possible to predict precisely what tasks will be necessary in Phase II (formerly Phase IV).
17. Under project management at the bottom of the schedule, there is an entry for monthly reports; additionally, the technical memoranda will provide timely documentation of the field procedures and results from each field task.
18. The PRP's consultant will work with Weston to document the already defined study area boundaries. Surveying will be conducted at several different times during the investigation, including an initial survey of site boundaries, and subsequent surveys to establish the piezometer and geophysical grids, and to plot monitoring wells and other sampling points on the investigation maps.

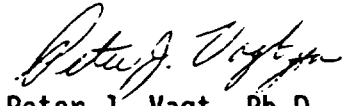
The changes listed on page 4 of the EPA letter have been incorporated into the framework and shown on the schedule.

Warzyn welcomes the opportunity to discuss any of these issues further, and looks forward to working with the technical subcommittee to bring it to a successful conclusion. If you have questions please call us at 312/773-8484.

Respectfully submitted,

WARZYN ENGINEERING INC.


Joseph D. Adams Jr., P.E.
General Manager - Chicago


Peter J. Vagt, Ph.D.
Senior Hydrogeologist

Enclosures: Modified framework for the RI Scope of Work
Proposed RI/FS schedule

251L05PV



MODIFIED FRAMEWORK FOR THE PROPOSED SCOPE OF WORK FOR THE ACS RI/FS

PHASE I - REMEDIAL INVESTIGATION

I. TASK 1 - PROBLEM DEFINITION

- A. Review Available Information
 - 1. Published data (USGS, ASCS, etc.)
 - 2. Site visit and interviews
 - 3. Aerial photographs
 - 4. Water use survey
 - a. Domestic wells
 - b. Industrial and municipal wells
 - 5. Review available reports (RCRA submittal, etc)
- B. Define Site Boundaries
 - 1. Establish site grid
 - 2. Define site boundaries in the field
- C. Geophysical Survey
 - 1. Magnetometer/gradiometer (where effective)
 - a. On-site containment area
 - b. Off-site containment area
- D. Surface Water Survey
 - 1. Set up surface water bench marks
- E. Environmental Audit of ACS
 - 1. Coordinate with RCRA audit
 - 2. Evaluate process streams
 - 3. Define potential sources
- F. Establish Remedial Alternatives

*Surface / sediment
sample
for
analysis
see also*

II. TASK 2 - HYDROGEOLOGIC INVESTIGATION

- A. Characterize Flow System
 - 1. Monitor ACS hydraulics
 - a. Evaluate volumes
 - 2. Evaluate landfill hydraulics
 - a. Install leachate wells
 - b. Monitor de-watering pumpage
 - 3. Install perimeter monitoring wells
 - a. Test near surface hydraulic properties
 - 4. Install piezometer grid
 - 5. Model groundwater flow system
 - a. Conduct water balance
 - b. Determine groundwater flow paths and rates



MODIFICATIONS TO FRAMEWORK FOR PROPOSED WORK SCOPE (Continued)

- B. Initial Shallow Sampling
 - 1. Surface water and sediment sampling
 - 2. Groundwater sampling from perimeter wells
 - 3. Effluent sampling

III. TASK 3 - NEAR SURFACE CONTAMINATION INVESTIGATION

- A. Waste Characterization
 - 1. Soil borings at ACS (E F G M)
 - 2. Leachate Sampling
 - a. Leachate Wells in Landfill
 - 3. Waste volume calculation
- B. Groundwater Characterization
 - 1. Install eight new shallow monitoring wells
 - 2. Install four lower aquifer monitoring wells
 - a. Extend stratigraphic description
 - b. Conduct hydraulic property tests
 - 3. Sample existing and new monitoring wells
- C. Groundwater Transport Model

PHASE II - REMEDIAL INVESTIGATION

IV. ADDITIONAL CONTAMINATION INVESTIGATION

- A. Install Additional Monitoring Wells as Necessary
 - 1. Upper aquifer
 - 2. Lower aquifer
- B. Collect Additional Samples as Necessary

V. ENDANGERMENT ASSESSMENT

FEASIBILITY STUDY

VI. FEASIBILITY STUDY

- A. Proposed Response
- B. Remedial Technologies
- C. Develop Alternatives
- D. Screening Alternatives
- E. Evaluate Alternatives
- F. Preliminary Report
- G. Conceptual Design
- H. Public Comments on FS
- I. Community Relations
- J. Final FS Report



HAZARDOUS SUBSTANCE LIST

(Page 1 of 3)

VOLATILES

1. Chloromethane
2. Bromomethane
3. Vinyl Chloride
4. Chloroethane
5. Methylene Chloride
6. Acetone
7. Carbon Disulfide
8. 1,1-Dichloroethene
9. 1,1-Dichloroethane
10. trans-1,2-Dichloroethane
11. Chloroform
12. 1,2-Dichloroethene
13. 2-Butanone
14. 1,1,1-trichloroethene
15. Carbon Tetrachloride
16. Vinyl Acetate
17. Bromodichloromethane
18. 1,1,2,2-Tetrachloroethane
19. 1,2-Dichloropropane
20. trans-1,3-Dichloropropene
21. Trichloroethene
22. Dibromochloromethane
23. 1,1,2-Trichloroethane
24. Benzene
25. cis-1,3-Dichloropropene
26. 2-Chloroethyl Vinyl Ether
27. Bromoform
28. 2-Hexanone
29. 4-Methyl-2-pentanone
30. Tetrachloroethane
31. Toluene
32. Chlorobenzene
33. Ethyl Benzene
34. Styrene
35. Total Xylenes

SEMI-VOLATILES

36. Phenol
37. bis(2-Chloroethyl)ether
38. 2-Chlorophenol
39. 1,3-Dichlorobenzene
40. 1,4-Dichlorobenzene
41. Benzyl Alcohol
42. 1,2-Dichlorobenzene
43. 2-Methylphenol
44. bis(2-Chloroisopropyl)ether
45. 4-Methylphenol
46. N-Nitroso-Dipropylamine
47. Hexachloroethane
48. Nitrobenzene
49. Isophorone
50. 2-Nitrophenol
51. 2,4-Dimethylphenol
52. Benzoic Acid
53. bis(2-Chloroethoxy)methane
54. 2,4-Dichlorophenol
55. 1,2,4-Trichlorobenzene
56. Naphthalene
57. 4-Chloroaniline
58. Hexachlorobutadiene
59. 4-Chloro-3-methylphenol
(para-chloro-meta-cresol)
60. 2-Methylnaphthalene
61. Hexachlorocyclopentadiene
62. 2,4,6-Trichlorophenol
63. 2,4,5-Trichlorophenol
64. 2-Chloronaphthalene
65. 2-Nitroaniline
66. Dimethyl phthalate
67. Acenaphthylene
68. 3-Nitroaniline

WARZYN



SEMI-VOLATILES

- 69. Acenapthene
- 70. 2,4-Dinitrophenol
- 71. 4-Nitrophenol
- 72. Dibenzofuran
- 73. 2,4-Dinitrotoluene
- 74. 2,6-Dinitrotoluene
- 75. Diethylphthalate
- 76. 4-Chlorophenyl Phenyl ether
- 77. Fluorene
- 78. 4-Nitroaniline
- 79. 4,6-Dinitro-2-methylphenol
- 80. N-nitrosodiphenylamine
- 81. 4-Bromophenyl Phenyl ether
- 82. Hexachlorobenzene
- 83. Pentachlorophenol
- 84. Phenanthrene
- 85. Anthracene
- 86. Di-n-butylphthalate
- 87. Fluoranthene
- 88. Pyrene
- 89. Butyl Benzyl Phthalate
- 90. 3,3-Dichlorobenzidine
- 91. Benzo(a)anthracene
- 92. bis(2-ethylhexyl)phthalate
- 93. Chrysene
- 93. Di-n-octyl Phthalate
- 95. Benzo(b)fluoranthene
- 96. Benzo(k)fluoranthene
- 97. Benzo(a)pyrene
- 98. Indeno(1,2,3-cd)pyrene
- 99. Dibenz(a,h)anthracene
- 100. Benzo(g,h,i)perylene

PESTICIDES

- 101. alpha-BHC
- 102. beta-BHC
- 103. delta-BHC
- 104. gamma-BHC (Lindane)
- 105. Heptachlor
- 106. Aldrin
- 107. Heptachlor Epoxide
- 108. Endosulfan I
- 109. Dieldrin
- 110. 4,4'-DDE
- 111. Endrin
- 112. Endosulfan II
- 113. 4,4'-DDD
- 114. Endosulfan Sulfate
- 115. 4,4'-DDT
- 116. Endrin Ketone
- 117. Methoxychlor
- 118. Chlordane
- 119. Toxaphene
- 120. Aroclor-1016
- 121. Aroclor-1221
- 122. Aroclor-1232
- 123. Aroclor-1242
- 124. Aroclor-1248
- 125. Aroclor-1254
- 126. Aroclor-1260

(Page 3 of 3)

INORGANIC ELEMENTS

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Zinc
Cyanide



FIELD PARAMETERS AND MINERALS
FOR WATER SAMPLES

FIELD PARAMETERS

Temperature
pH
Conductivity

MINERALS

Sulfate
Alkalinity
Chloride

PROPOSED RI/FS SCHEDULE
AMERICAN CHEMICAL SERVICES
GRIFFITH INDIANA

[illegible]

LEGEND

XXXXXX
XXX WARZYN
OOO REVIEW BY EPA
LLL LAB TURN-AROUND

FOOTNOTES

(1) Task 1.8, defining site boundaries, cannot be completed without authorization of site access from American Chemical Services

(2) Draft RI will be submitted 12 weeks after completion of Phase II field work, which will be contingent upon the findings from Phase I.

400
ambulatory
A.I.

WARZYN



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*K.W. states that
the US Fish & Wildlife
service was only concerned
that soil and sediment
samples be collected
in wetland areas.*

EPA Review Letter

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*RW wants no reduction until
samples are analyzed 2 times.
1 in a dry season, one in a wet season.*

WARZYN

(Page 4 EPA Letter)

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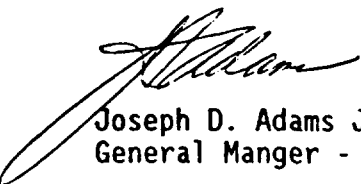
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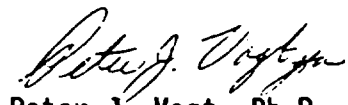
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Respectfully submitted,

WARZYN ENGINEERING INC.



Joseph D. Adams Jr., P.E.
General Manager - Chicago



Peter J. Vagt, Ph.D.
Senior Hydrogeologist

Enclosures: Modified framework for the RI Scope of Work
Proposed RI/FS schedule

251L05PV



MODIFIED FRAMEWORK FOR THE PROPOSED SCOPE OF WORK FOR THE ACS RI/FS

PHASE I - REMEDIAL INVESTIGATION

I. TASK 1 - PROBLEM DEFINITION

- A. Review Available Information**
 - 1. Published data (USGS, ASCS, etc.)
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- D. Surface Water Survey**
 - 1. Set up surface water bench marks
- E. Environmental Audit of ACS**
 - 1. Coordinate with RCRA audit
 - 2. Evaluate process streams
 - 3. Define potential sources
- F. Establish Remedial Alternatives**

II. TASK 2 - HYDROGEOLOGIC INVESTIGATION

- A. Characterize Flow System**
 - 1. Monitor ACS hydraulics
 - a. Evaluate volumes
 - 2. Evaluate landfill hydraulics
 - a. Install leachate wells
 - b. Monitor de-watering pumpage
 - 3. Install perimeter monitoring wells
 - a. Test near surface hydraulic properties
 - 4. Install piezometer grid
 - 5. Model groundwater flow system
 - a. Conduct water balance
 - b. Determine groundwater flow paths and rates

MODIFICATIONS TO FRAMEWORK FOR PROPOSED WORK SCOPE (Continued)

- B. Initial Shallow Sampling
 - 1. Surface water and sediment sampling
 - 2. Groundwater sampling from perimeter wells
 - 3. Effluent sampling

III. TASK 3 - NEAR SURFACE CONTAMINATION INVESTIGATION

- A. Waste Characterization
 - 1. Soil borings at ACS (E F G M)
 - 2. Leachate Sampling
 - a. Leachate Wells in Landfill
 - 3. Waste volume calculation
- B. Groundwater Characterization
 - 1. Install eight new shallow monitoring wells
 - 2. Install four lower aquifer monitoring wells
 - a. Extend stratigraphic description
 - b. Conduct hydraulic property tests
 - 3. Sample existing and new monitoring wells
- C. Groundwater Transport Model

PHASE II - REMEDIAL INVESTIGATION

IV. ADDITIONAL CONTAMINATION INVESTIGATION

- A. Install Additional Monitoring Wells as Necessary
 - 1. Upper aquifer
 - 2. Lower aquifer
- B. Collect Additional Samples as Necessary

V. ENDANGERMENT ASSESSMENT

FEASIBILITY STUDY

VI. FEASIBILITY STUDY

- A. Proposed Response
- B. Remedial Technologies
- C. Develop Alternatives
- D. Screening Alternatives
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- H. Public Comments on FS
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HAZARDOUS SUBSTANCE LIST

(Page 1 of 3)

VOLATILES

1. Chloromethane
2. Bromomethane
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6. Acetone
7. Carbon Disulfide
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10. trans-1,2-Dichloroethane
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12. 1,2-Dichloroethene
13. 2-Butanone
14. 1,1,1-trichloroethene
15. Carbon Tetrachloride
16. Vinyl Acetate
17. Bromodichloromethane
18. 1,1,2,2-Tetrachloroethane
19. 1,2-Dichloropropane
20. trans-1,3-Dichloropropene
21. Trichloroethene
22. Dibromochloromethane
23. 1,1,2-Trichloroethane
24. Benzene
25. cis-1,3-Dichloropropene
26. 2-Chloroethyl vinyl Ether
27. Bromoform
28. 2-Hexanone
29. 4-Methyl-2-pentanone
30. Tetrachloroethane
31. Toluene
32. Chlorobenzene
33. Ethyl Benzene
34. Styrene
35. Total Xylenes

SEMI-VOLATILES

36. Phenol
37. bis(2-Chloroethyl)ether
38. 2-Chlorophenol
39. 1,3-Dichlorobenzene
40. 1,4-Dichlorobenzene
41. Benzyl Alcohol
42. 1,2-Dichlorobenzene
43. 2-Methylphenol
44. bis(2-Chloroisopropyl)ether
45. 4-Methylphenol
46. N-Nitroso-Dipropylamine
47. Hexachloroethane
48. Nitrobenzene
49. Isophorone
50. 2-Nitrophenol
51. 2,4-Dimethylphenol
52. Benzoic Acid
53. bis(2-Chloroethoxy)methane
54. 2,4-Dichlorophenol
55. 1,2,4-Trichlorobenzene
56. Naphthalene
57. 4-Chloroaniline
58. Hexachlorobutadiene
59. 4-Chloro-3-methylphenol
(para-chloro-meta-cresol)
60. 2-Methylnaphthalene
61. Hexachlorocyclopentadiene
62. 2,4,6-Trichlorophenol
63. 2,4,5-Trichlorophenol
64. 2-Chloronaphthalene
65. 2-Nitroaniline
66. Dimethyl phthalate
67. Acenaphthylene
68. 3-Nitroaniline

WARZYN



SEMI-VOLATILES

- 69. Acenaphthene
- 70. 2,4-Dinitrophenol
- 71. 4-Nitrophenol
- 72. Dibenzofuran
- 73. 2,4-Dinitrotoluene

- 74. 2,6-Dinitrotoluene
- 75. Diethylphthalate
- 76. 4-Chlorophenyl Phenyl ether
- 77. Fluorene
- 78. 4-Nitroaniline

- 79. 4,6-Dinitro-2-methylphenol
- 80. N-nitrosodiphenylamine
- 81. 4-Bromophenyl Phenyl ether
- 82. Hexachlorobenzene
- 83. Pentachlorophenol

- 84. Phenanthrene
- 85. Anthracene
- 86. Di-n-butylphthalate
- 87. Fluoranthene

- 88. Pyrene
- 89. Butyl Benzyl Phthalate
- 90. 3,3-Dichlorobenzidine
- 91. Benzo(a)anthracene
- 92. bis(2-ethylhexyl)phthalate

- 93. Chrysene
- 93. Di-n-octyl Phthalate
- 95. Benzo(b)fluoranthene
- 96. Benzo(k)fluoranthene
- 97. Benzo(a)pyrene

- 98. Indeno(1,2,3-cd)pyrene
- 99. Dibenz(a,h)anthracene
- 100. Benzo(g,h,i)perylene

PESTICIDES

- 101. alpha-BHC
- 102. beta-BHC
- 103. delta-BHC

- 104. gamma-BHC (Lindane)
- 105. Heptachlor
- 106. Aldrin
- 107. Heptachlor Epoxide

- 108. Endosulfan I
- 109. Dieldrin
- 110. 4,4'-DDE
- 111. Endrin
- 112. Endosulfan II

- 113. 4,4'-DDD
- 114. Endosulfan Sulfate
- 115. 4,4'-DDT
- 116. Endrin Ketone
- 117. Methoxychlor

- 118. Chlordane
- 119. Toxaphene
- 120. Aroclor-1016
- 121. Aroclor-1221

- 122. Aroclor-1232
- 123. Aroclor-1242
- 124. Aroclor-1248
- 125. Aroclor-1254
- 126. Aroclor-1260

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INORGANIC ELEMENTS

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Zinc
Cyanide

**FIELD PARAMETERS AND MINERALS
FOR WATER SAMPLES**

FIELD PARAMETERS

Temperature
pH
Conductivity

MINERALS

Sulfate
Alkalinity
Chloride

PROPOSED RI/FS SCHEDULE
AMERICAN CHEMICAL SERVICES
GRIFFITH INDIANA

[illegible]

LEGEND
22222222

XXX WARZYM
OOO REVIEW BY EPA
LLL LAB TURN-AROUND

FOOTNOTES

- (1) Task 1.8, defining site boundaries, cannot be completed without authorization of site access from American Chemical Services
- (2) Draft RI will be submitted 12 weeks after completion of Phase II field work, which will be contingent upon the findings from Phase I.